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13. ABSTRACT ***(Maximum 200 Words)***

The present study estimated age-specific hospital admission rates for breast cancer in African American (AA) and White women through analyzing National Hospital Discharge Survey (NHDS) data from 1988 to 1994. Weighted linear regression was used to analyze trends. Specific standard errors for rates analyzed in the regression were produced using the SUDAAN program. The statistical significance of the weighted least squares test for trends is based on the two-sided z-test with a critical value of 1.96 (α=0.05). Hospital admission rates of breast cancer cases decreased among white women ($p<0.0004$). The rates for AA women were cubically associated with the lowest rate in 1990 and an increase in 1993. The mean 'Length of stay' was linearly decreasing over study period for Whites ($p<0.0093$) but not for AA women ($p<0.43$). Mean number of diagnosis was significantly increasing over time among whites ($p<0.005$) while that of AA was not linearly associated ($p<0.24$). Mean number of procedures was not linearly increasing among whites ($p<0.13$) nor among AA ($p<0.13$).

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Kyungsoo Lee 8/22/00

PI - Signature Date

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Introduction

The present study attempts to estimate age-specific hospital admission rates for breast cancer in African American (AA) and White women through analyzing National Hospital Discharge Survey (NHDS) data from 1988 to 1994 with 1987 data used for baseline comparison. Due to the sample design change in 1988, the comparison with 1987 as a baseline may not be valid nor meaningful. Therefore, this report will include only 1988 to 1994 data, excluding 1987 data. Trend analyses on age-specific and overall breast cancer admissions were included in this report.

Body

We analyzed age-specific hospital admission rates for breast cancer from 1990 to 1994 by using NHDS data. In order to estimate standard errors of age-specific rates, we went to the Research Data Center for National Center for Health Statistics to use "restricted data" such as 'Hospital ID' and 'primary sampling unit'. Table 1 and Figure 1 show the hospital admission rates and 95% confidence interval of breast cancer between White and African American women from 1988 to 1994. Weighted linear regression was used to analyze trends. Specific standard errors for rates analyzed in the regression were produced using the SUDAAN program. The statistical significance of the weighted least squares test for trends is based on the two-sided z-test with a critical value of 1.96 (α=0.05). Hospital admission rates of breast cancer were linearly decreasing among White women ($p<0.0004$). Among AA women those rates were not linearly associated with time ($p<0.54$). For AA women, the lowest rate occurred in 1990 and there was a little increase in 1993.

Table 2 and 3 show age-specific hospital admission rates of breast cancer by race from 1988 to 1994. Among White women, excluding age group 20-44, hospital admission rates

significantly decreased over the study period. Only ages 60-69 showed a significant linear decrease among AA women.

Table 4 shows percentages by age groups, who were admitted in the hospital for breast cancer. AA women ages 20-44 showed a significant increase over the study period ($p<0.01$). Figure 2 shows the percentages of women ages 20-44, who were hospitalized due to breast cancer over the study period by race. The trend analysis supported the hypothesis that AA women had higher proportion of breast cancer in the younger age group compared to White women.

Table 5 shows means and standard errors of age, length of stay, number of diagnosis, and procedures by race. As Figure 3 shows that hospital admitted breast cancer patients mean ages were stable among Whites, compared to AA women which decreased significantly over the study period ($p<0.0001$). Figure 4 shows "Length of stay" means over time by race. These means were linearly decreasing over time for Whites ($p<0.0093$) but not for AA ($p<0.43$). Figure 5 shows means of "number of diagnosis" and "number of procedures" over time. The mean number of diagnosis was significantly increasing over time among Whites ($p<0.005$) while that of AA was not linearly associated ($p<0.24$). The mean number of procedures was not linearly increasing among Whites ($p<0.13$) nor among AA women ($p<0.13$).

Figure 6 shows percentages of "routine discharge" by race over the study years. No significant trends exist for either race. Table 6 shows the percentages of expected sources of payments by year and race. Approximately 40% of the White women were on Medicare versus 30% of the AA women. This trend decrease among AA women over study period ($p<0.05$). AA women were five times (20%) more likely to be covered by Medicaid than Whites (4%). On average, 54% of breast cancer patients who were AA were from the Southern region and 5%

from the Western region, while 35% of the White from the South and 13% from the West.

Conclusions

Hospital admission rates of breast cancer were linearly decreasing among White women. Those rates were cubically associated with the lowest rate in 1990 and an increase in 1993 among AA women. Hospital admission rates of breast cancer among women ages 20-44 did not show any trends over the study period. However, the percentage of hospital admitted White and AA women ages 20-44 support the hypothesis that AA women have a higher proportion of breast cancer among younger age groups compared to White women.

APPENDICES

Table 1. Hospital admission rates* and 95% confidence interval of breast cancer between White and African American women from 1988 to 1994.

	White		African American	
Year	Rate	95% Confidence Interval	Rate	95% Confidence Interval
1988	310.95	(262.12 , 359.78)	396.82	(251.40 , 542.25)
1989	290.25	(245.36 , 335.14)	299.95	(202.51 , 397.40)
1990	265.47	(232.14 , 298.80)	182.47	(120.45 , 244.50)
1991	248.66	(215.99 , 281.33)	198.80	(143.75 , 253.86)
1992	261.23	(224.23 , 298.22)	228.37	(138.07 , 318.67)
1993	243.06	(211.50 , 274.62)	252.75	(190.22 , 315.27)
1994	217.11	(186.13 , 248.09)	219.40	(153.75 , 285.05)
Trend	Z = -3.5339	P <0.0004	Z = -0.6152	P < 0.54

rates* per 100,000

Table 2. Age-specific admission rates* of breast cancer among White women from 1988 to 1994

Age group	20-44		45-59		60-69		70-84	
Year	Rate	s.e.	Rate	s.e.	Rate	s.e.	Rate	s.e.
1988	100.43	12.88	498.13	71.09	531.48	45.04	685.34	62.33
1989	83.29	10.14	467.04	59.16	533.37	52.84	638.40	62.66
1990	94.61	12.32	391.01	35.57	537.04	49.17	499.11	39.62
1991	84.99	10.46	322.69	30.61	500.89	52.79	563.18	51.13
1992	89.42	10.68	387.24	39.37	486.01	61.04	538.88	56.30
1993	97.43	15.48	301.43	28.53	433.07	46.19	550.58	50.69
1994	75.55	9.40	354.82	39.76	384.00	41.08	389.40	47.20
Trend	$z = -1.05$	$p<0.29$	$z=-2.58$	$p<0.01$	$z=-2.99$	$p<0.03$	$z = -3.31$	$p<0.009$

rates* per 100,000

Table 3. Age-specific admission rates* of breast cancer among African American women from 1988 to 1994.

Age group	20-44		45-59		60-69		70-84	
Year	Rate	s.e.	Rate	s.e.	Rate	s.e.	Rate	s.e.
1988	90.39	17.85	636.14	248.78	969.20	189.92	1410.99	616.46
1989	100.50	25.65	393.09	105.11	598.98	157.01	1204.00	412.15
1990	69.18	16.69	257.73	87.55	371.98	117.56	588.62	203.90
1991	75.97	17.04	433.34	78.72	425.42	134.78	306.89	77.62
1992	99.81	23.72	539.51	210.96	383.60	97.36	272.59	80.66
1993	102.85	25.17	483.91	93.25	404.56	112.84	625.64	180.90
1994	109.33	30.36	421.37	105.80	328.52	70.31	404.49	101.31
Trend	$z = 0.60$	$p<0.55$	$z = 0.81$	$p<0.42$	$z = -2.52$	$p< 0.12$	$z =-0.40$	$p<0.69$

rates* per 100,000

Table4. Distribution of breast cancer patients age-group by race from 1988 to 1994

		White		African American	
Age-group	Year	%	s.e.	%	s.e.
	1988	17.44	2.07	14.07	3.53
	1989	15.47	1.35	20.69	4.86
	1990	19.06	1.79	23.25	4.55
20-44	1991	18.39	1.74	23.85	4.99
	1992	18.18	1.87	27.15	6.83
	1993	21.11	2.63	25.14	5.17
	1994	18.17	2.09	30.6	6.31
Trend		$z = 1.38$	$p < 0.17$	$z = 2.63$	$p<0.01$
	1988	32.77	3.26	31.56	9.39
	1989	33.09	2.39	25.85	6.14
	1990	30.28	1.9	27.84	7.89
45-59	1991	26.64	1.64	41.75	4.87
	1992	31.6	2.24	46.18	10.13
	1993	27.2	1.95	38.28	6.29
	1994	36.91	2.58	39.56	7.11
Trend		$z = -0.01$	$p<0.99$	$z = 1.74$	$p < 0.08$
	1988	22.42	1.76	25.35	6.12
	1989	23.93	1.89	20.73	5.72
	1990	26.19	1.86	21	6.47
60-69	1991	25.57	2.14	21.34	4.98
	1992	23.07	1.96	16.52	4.91
	1993	21.66	1.98	15.58	3.67
	1994	21.05	1.94	14.44	3.04
Trend		$z= -1.07$	$p < 0.29$	$z = -1.95$	$p < 0.051$
	1988	27.36	2.25	29.01	9.69
	1989	27.51	2.32	32.73	7.08
	1990	24.47	1.71	27.91	7.25
70-84	1991	29.4	2.1	13.07	3.2
	1992	27.14	2.36	10.15	3.31
	1993	30.03	2.38	21.00	5.3
	1994	23.87	2.22	15.41	3.79
Trend		$z = -1.58$	$p < 0.11$	$z = -1.79$	$p < 0.07$

Table 5. Mean (s.e.) of Age, length of stay, number of diagnosis and procedures by race from 1988 to 1994

		White		African Aerican	
	Year	Mean	s.e.	Mean	s.e.
Age	1988	58.82	0.82	59.38	1.68
	1989	59.3	0.67	59.23	2.46
	1990	58.26	0.64	56.87	1.99
	1991	59.74	0.61	54.24	1.41
	1992	58.64	0.66	52.41	1.57
	1993	59.05	0.91	54.59	1.79
	1994	58.01	0.69	52.01	1.44
Trend		z = -0.8036	p= 0.4216	z = -3.8503	p = 0.0001
Length of stay	1988	5.99	0.4	6.04	0.9
	1989	5.86	0.42	6.68	0.96
	1990	4.83	0.23	8.34	1.03
	1991	5.63	0.4	6.43	0.96
	1992	4.76	0.31	6.17	0.7
	1993	5.05	0.45	5.89	0.6
	1994	4.66	0.29	6.37	1.88
Trend		z = -2.6022	p = 0.0093	z = -0.7803	p = 0.4352
Number of Diagnosis	1988	3.04	0.09	3	0.21
	1989	3.18	0.11	3.38	0.28
	1990	3.02	0.1	3.7	0.27
	1991	3.19	0.1	3.11	0.23
	1992	3.09	0.09	3.6	0.2
	1993	3.42	0.11	3.65	0.22
	1994	3.41	0.12	3.16	0.24
Trend		z = -2.8040	p = 0.0050	z = -1.1638	p = 0.2445
Number of Procedure	1988	1.52	0.06	1.44	0.09
	1989	1.57	0.08	1.26	0.12
	1990	1.6	0.04	1.73	0.16
	1991	1.71	0.07	1.73	0.1
	1992	1.65	0.05	1.62	0.12
	1993	1.69	0.05	1.59	0.18
	1994	1.59	0.05	1.49	0.13
Trend		z = 1.5012	p = 0.1333	z = 1.4996	p = 0.1337

Table6. Distribution of Expected sources of payment (ESOP) by race from 1988 to 1994

		White		African American	
ESOP	Year	%	s.e.	%	s.e.
	1988	37.8	2.57	30.3	7.4
	1989	40.29	2.6	45.05	6.83
	1990	40.9	2.03	31.46	7.64
Medicare	1991	46.45	2.24	28.77	4.36
	1992	40.94	3.08	25.86	7.1
	1993	42	2.43	29.05	6.65
	1994	38.18	2.52	23.88	4.06
Trend		$z = 0.3342$	$p < 0.7383$	$z = -1.9730$	$p < 0.0485$
	1988	3.35	0.94	17.66	4.45
	1989	3.5	0.73	13.24	7.72
	1990	4.14	1.02	25.49	8.33
Medicaid	1991	4.82	1.84	19.71	6.04
	1992	3.49	0.77	15.75	4.02
	1993	4.97	1.06	21.41	6.3
	1994	4.68	1.16	27.7	6.94
Trend		$z = 1.1135$	$p < 0.2655$	$z = 0.8129$	$p < 0.4163$
	1988	58.85	2.71	52.04	7.92
	1989	56.21	2.74	41.71	6.29
Blue cross/	1990	54.96	2.04	43.05	9.72
Other/	1991	48.73	2.29	51.53	5.69
Self	1992	55.57	3.12	58.39	8.35
	1993	53.03	2.66	49.54	6.23
	1994	57.14	2.59	48.42	6.43
Trend		$z = -0.7290$	$p < 0.4660$	$z=0.5281$	$p <0.5974$

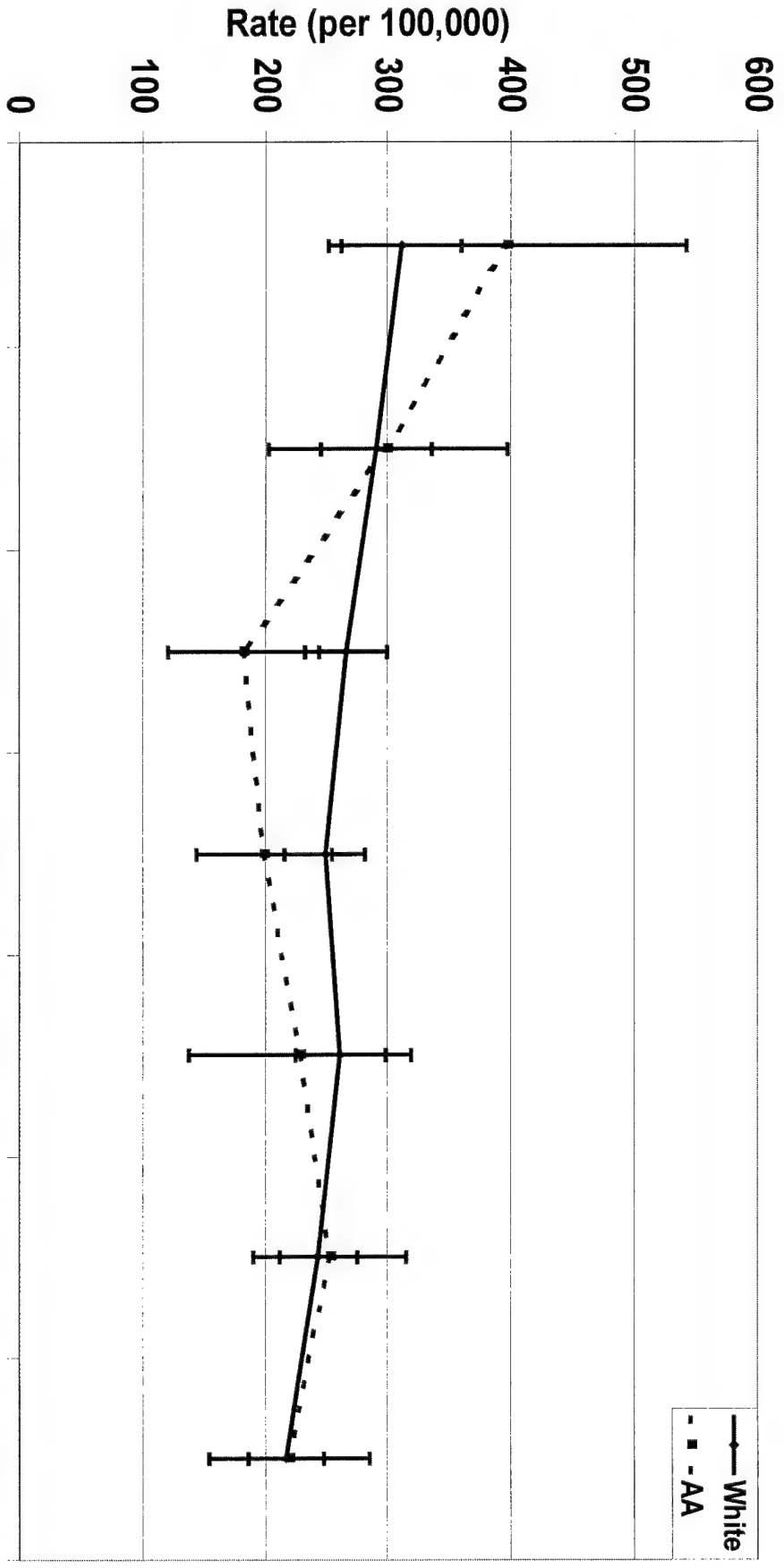

Figure1. Hospital admission rates and 95% C.I. of breast cancer by race from 1988 to1994

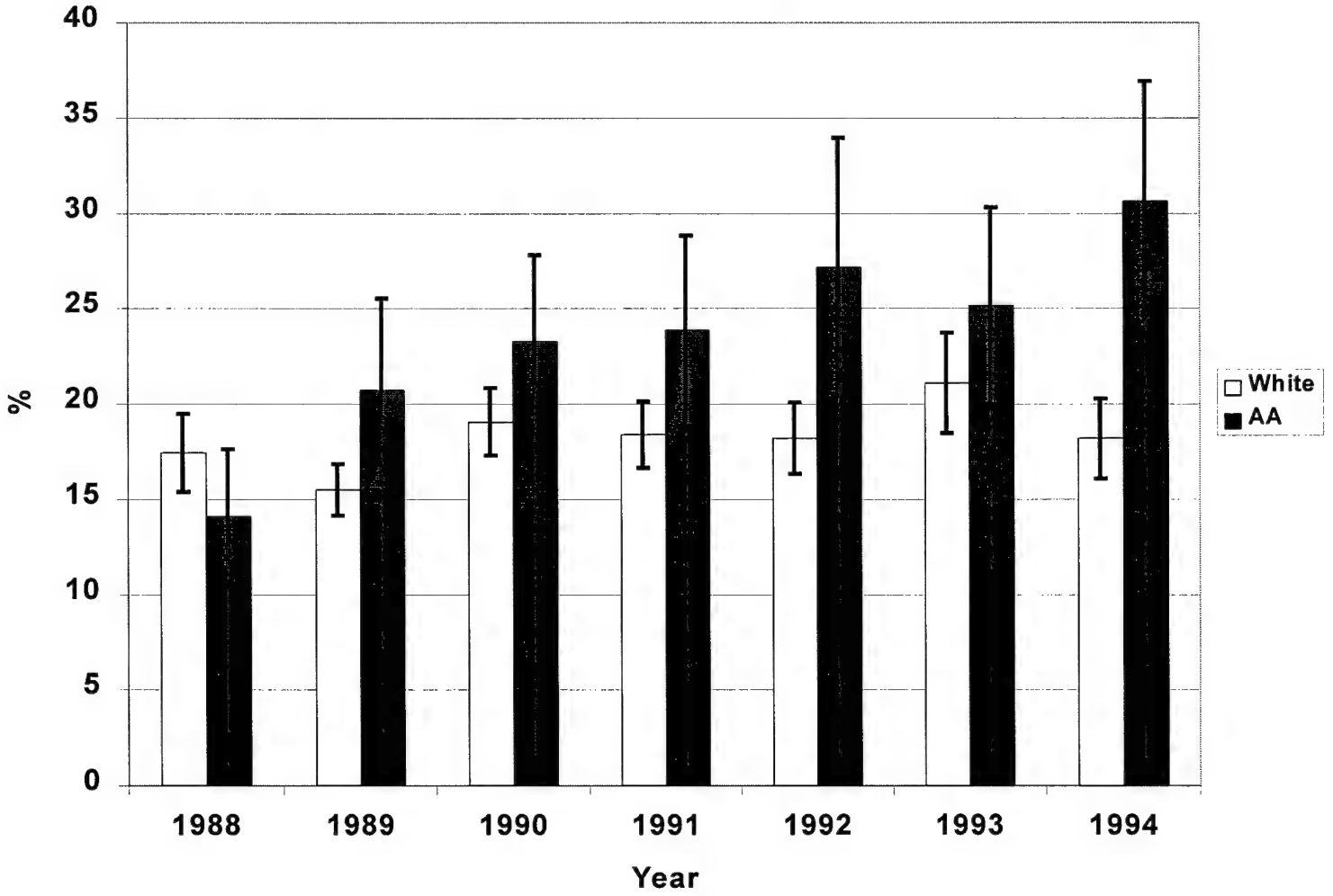

Figure2. Hospital admitted breast cancer percentages (± s.e.) of ages 20-44 by race from 1988 to 1994

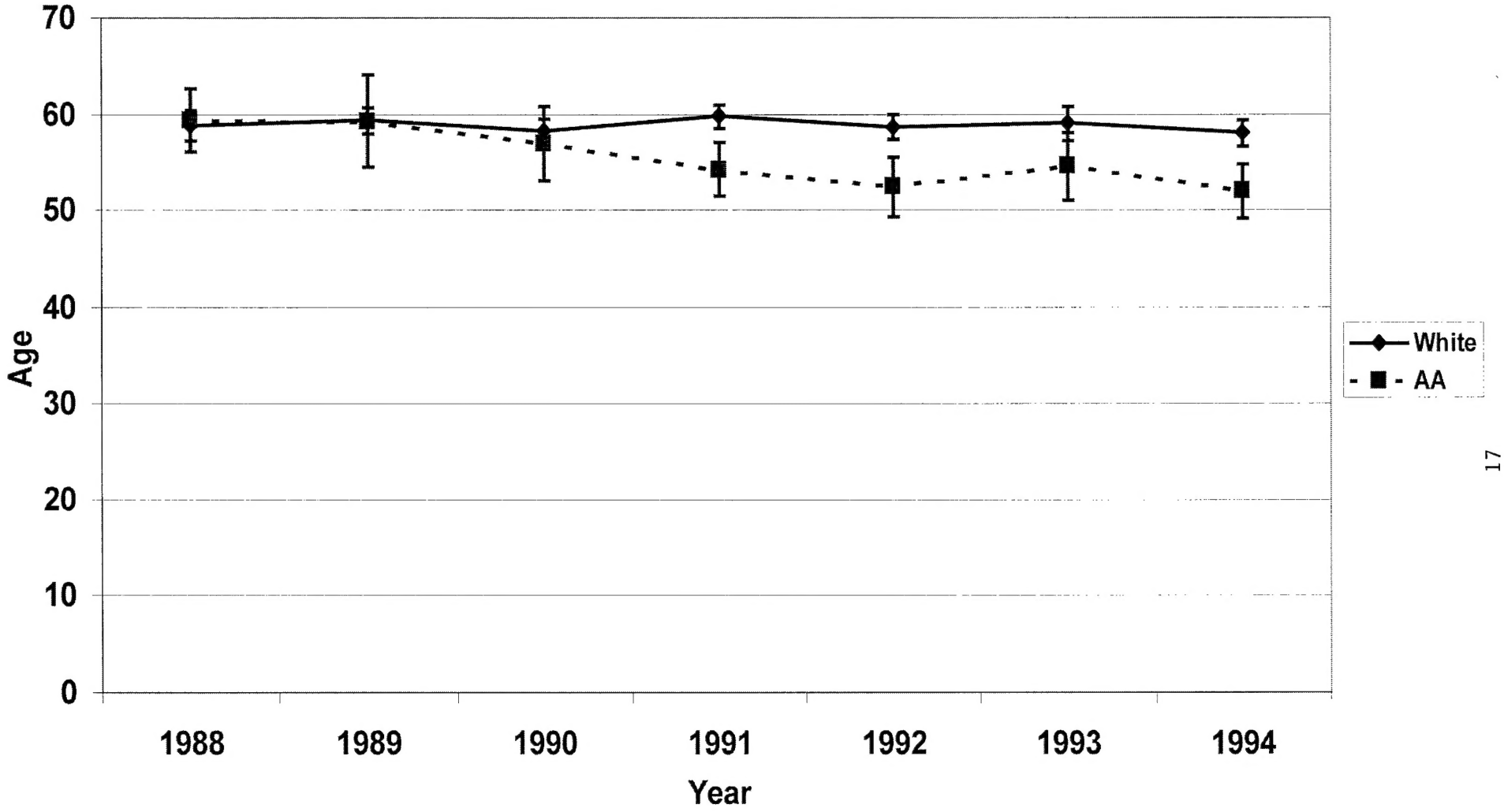

Figure3. Mean age (95% C.I.) of breast cancer patients by race from 1988 to 1994

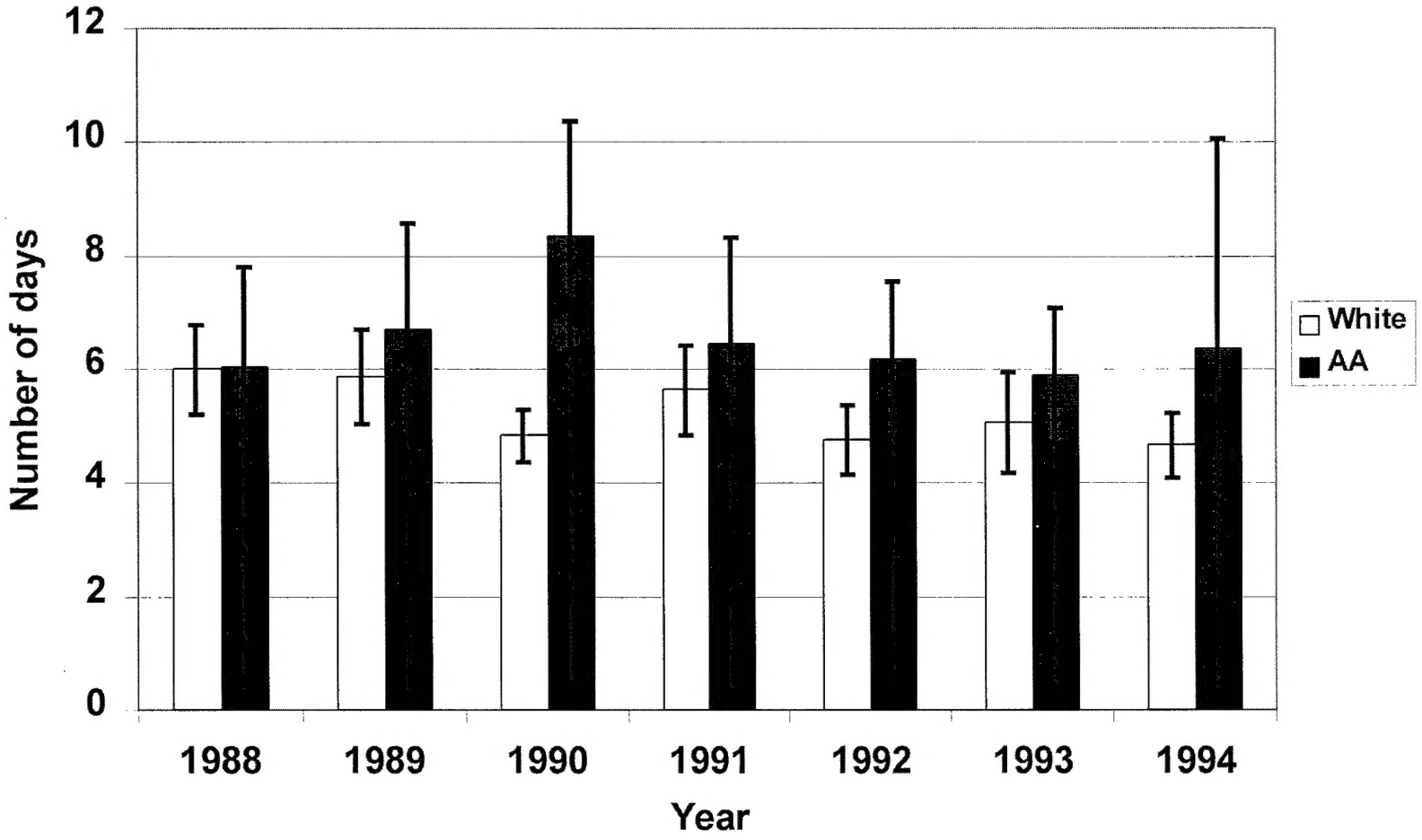

Figure4. Average length of stay (95% C.I.) of breast cancer patients by race from 1988 to1994

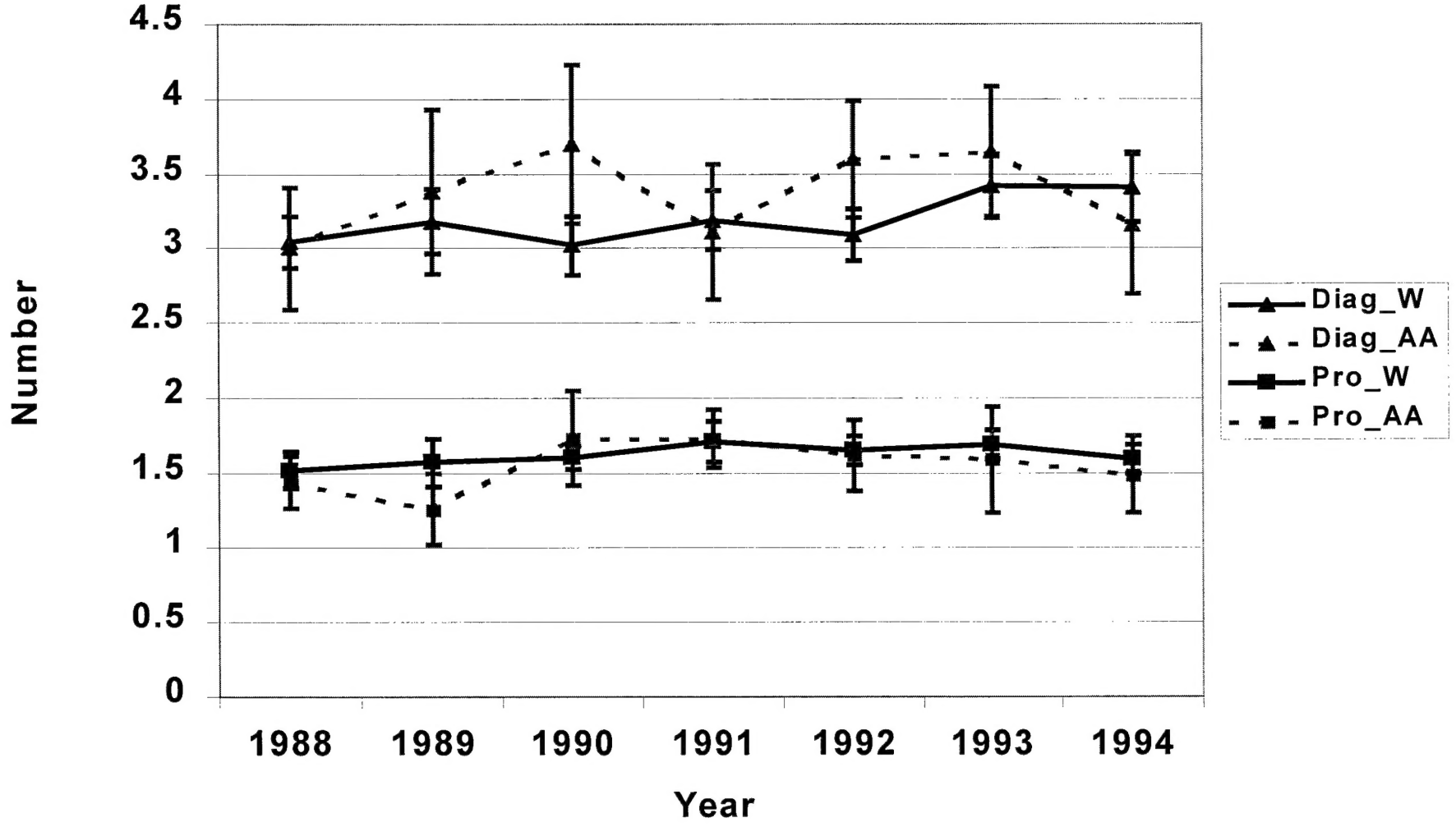

Figure5. Mean number of diagnosis and procedures (95% C.I.) by race from 1988 to 1994

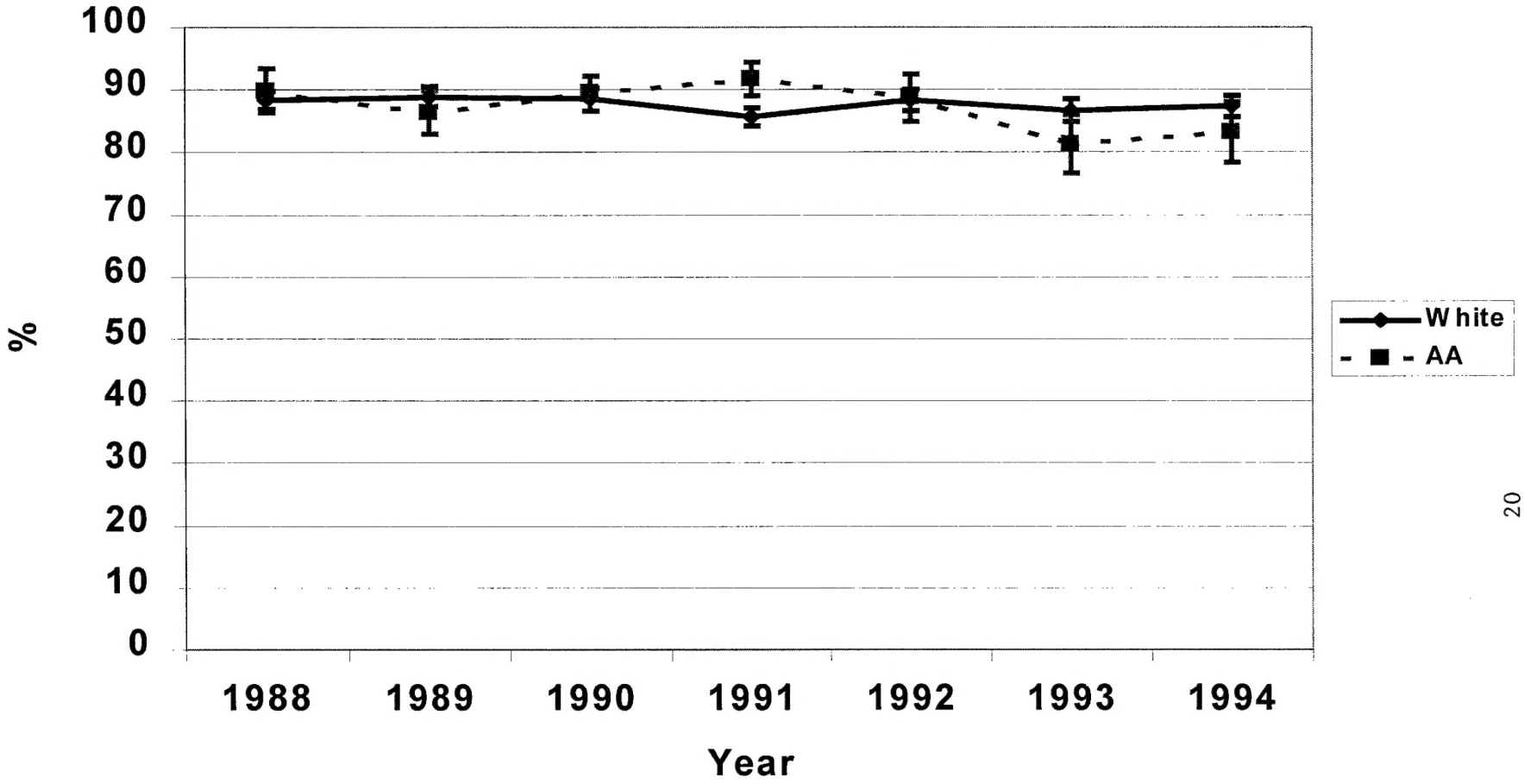

Figure 6. Percentages of routine discharge (± s.e.) by race from 1988 to 1994